

ABSTRACT OF THE DISCLOSURE

A protein identified in humans and *Schizosaccharomyces pombe*, Pot1p, binds single-stranded telomeric DNA and both stabilizes chromosome ends and regulates telomerase activity. Compounds that stabilize or disrupt the Pot1p-DNA interaction will be useful in regulating the telomere length of a cell. Because telomere length is involved in the regulation of cellular life-span, the life-span of useful cell populations may be prolonged or undesirable cells may be caused to cease proliferation. The identification of a Pot1 protein and its encoding DNA provides methods of screening useful compounds or diagnosing illnesses that involve altered expression or structure of a Pot1 protein or gene.